

**CURRICULUM VITA**

**January 13, 2004**

**JOHN P. KIRWAN, Ph.D., F.A.C.S.M.**

**DEPARTMENTS OF REPRODUCTIVE BIOLOGY & NUTRITION  
CASE WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE  
CLEVELAND, OHIO**

**PERSONAL INFORMATION:**

**Correspondence Address:** Dept of Obstetrics & Gynecology  
 MetroHealth Medical Center  
 Bell Greve Bldg., Room G-231B  
 2500 MetroHealth Drive  
 Cleveland, Ohio 44109

**Work Phone:** (216) 778-8848  
**Work Fax:** (216) 778-8847  
**E-Mail:** [jkirwan@metrohealth.org](mailto:jkirwan@metrohealth.org)  
[Jpk10@po.cwru.edu](mailto:Jpk10@po.cwru.edu)

**Date of Birth:** April 24, 1957

**Place of Birth:** Carlow, Ireland

**Immigration Status:** Permanent Resident

**EDUCATIONAL HISTORY:**

**Post-Doctoral Fellow  
 1989-91** Washington University School of Medicine  
 Dept of Internal Medicine, St. Louis, MO 63110  
 (Physiology & Metabolism)

**Ph.D.  
 1984-87** Ball State University  
 Human Performance Laboratory, Muncie, IN 47306  
 (Human Bioenergetics)

**M.Sc.  
 1982-84** University of Massachusetts  
 Dept. of Exercise Science, Boyden Building, Amherst, MA 01002  
 (Exercise Biochemistry)

**B.A. (Hons)  
 1976-80** University of Limerick  
 Castletroy, Limerick, Ireland  
 (Major: Kinesiology)

**PROFESSIONAL APPOINTMENTS:**

**1999 – To Date** Departments of Reproductive Biology and Nutrition  
 Case Western Reserve University at MetroHealth Medical Center  
 (Associate Professor)

**1994 - 1999** Noll Physiological Research Center  
 The Pennsylvania State University  
 (Assistant Professor, Tenured)

**1993 - 1994** Noll Physiological Research Center  
 The Pennsylvania State University  
 (Director of Clinical Research Center)

<b>1991 - 1993</b>	National Coaching and Training Centre University of Limerick, Ireland (Executive Director)
<b>1987 - 1989</b>	Dept. of Internal Medicine Washington University School of Medicine, St. Louis, MO (Research Instructor in Medicine)

**GRANT SUPPORT:**

<i>Title and Source</i>	<i>Period</i>	<i>Total Costs</i>
"Training Overload: Carbohydrate Balance and Muscular Fatigue" United States Olympic Committee - (Co-I.)	1986-87	\$25,000
"Effects of Glycemic Index on Submaximal Exercise Performance" Quaker Oats, Inc. - (Co-I.)	1994-95	\$206,000
"Effects of Resistance Exercise on Insulin Action in Older Men and Women" Pennsylvania State University - Interdisciplinary Seed Grant (P.I.)	1994-95	\$4,500
"Age, Exercise, Diet: Effects on Glucose-Fatty Acid Cycle" NIH NIA R29 AG12834 - (P.I.)	1995-00	\$496,208
"General Clinical Research Center" NIH NCRR MO1 RR10732 - (Director of Muscle Core Laboratory)	1995-99	\$9,460,533
"Research Training in Physiological Adaptations to Stress" Predoctoral training grant. NIH T32 GM08619 - (Preceptor)	1996-01	\$547,999
"Interdisciplinary Training in Gerontology" Predoctoral training grant. NIH NIA T32 AG00048- (Preceptor)	1996-01	\$1,042,035
"Effects of a High Protein Diet on Weight Loss, Body Composition and Energy Expenditure in Obese Men and Women" Robard Corporation - (P.I.)	1997-98	\$65,197
"Effects of Food and Lifestyle Change on Cardiovascular Disease Risk Factors and Food Patterns in Moderately Hypercholesterolemic Men and Women" Kellogg's Foundation - (C.I.)	1998-99	\$414,394
"Age, Exercise, Diet: Effects on Glucose-Fatty Acid Cycle" NIH NIA Minority Predoctoral Supplement Award to R29 AG12834-S1 - (Mentor)	1998-00	\$66,497
"Fiber Content and Glycemic Index of Select Breakfast Foods" General Mills Corp. - (P.I.)	1999-00	\$24,000
"Center for Study of Growth Regulation in Human Pregnancy" NIH K12 HD01273 - (Faculty Mentor)	1999-04	\$1,740,071
"Use of Exercise to Identify Mechanisms Responsible for Insulin Resistance in Type 2 Diabetes"	2001-02	\$92,728

Diabetes Association of Greater Cleveland – (P.I.)

“Maternal Nutrition and Fetal Outcome” General Mills Corp. - Pending (P.I.)	2000-01	\$90,000
“Maternal Nutrient Metabolism, Genotype and Fetal Growth” NIH NICHD RO1 HD40358 – Not Funded (P.I.)	2000-05	\$1,893,750
“Environmental and Genetic Determinants of Fetal Growth in GDM Pregnancies” American Diabetes Association Clinical Research Award – Not Funded (P.I.)	2000-03	\$297,677
“Increased Fetal Fat, a Major Risk Factor for Metabolic Disease in Western Societies” NIH NICHD RFA – Not Funded (P.I.)	2001-06	\$1,893,750
“Age, Exercise, Diet: Effects on Glucose-Fatty Acid Axis” NIH NIA RO1 AG12834 – 28 <sup>th</sup> %ile on 1 <sup>st</sup> submission (P.I.)	2002-07	\$1,885,510

### **TEACHING EXPERIENCE:**

<i>Case Western Reserve University</i>	Sports Nutrition (NTRN 460) Gastroenterology/Nutrition (Medical Student Lecture Series) “Metabolic effects of exercise” Seminar in Dietetics (NTRN 516) “Body composition assessment” Investigative Methods in Nutrition (NTRN 561)
<i>Penn State University</i>	Scientific Basis of Exercise for the Older Adult (KINES/PHSIO 481W)  Nutrition Colloquium (NUTR 590)  Exercise Physiology (KINES 350)  Laboratory Procedures in Applied Physiology (KINES/PHSIO 597B)  Advanced Exercise Physiology (KINES/PHSIO 567)
<i>Washington University Dept. of Physical Therapy</i>	Advanced Physiology (PT 503)
<i>Ball State University Dept. of Physical Education</i>	Human Anatomy Exercise Physiology

### **ADMINISTRATIVE EXPERIENCE:**

<b>1991-93</b>	Executive Director, National Coaching and Training Centre University of Limerick, Ireland
<b>1993-94</b>	Director, Clinical Research Center Noll Laboratory, The Pennsylvania State University
<b>1994-98</b>	Research Director, General Clinical Research Center

The Pennsylvania State University

**1994-98** Director, Executive Health Enhancement Program  
The Pennsylvania State University

**1994-99** Director, Muscle Core Laboratory, GCRC  
The Pennsylvania State University

**1999-02** Director, Perinatal Research Laboratory  
MetroHealth Medical Center

### **PUBLICATIONS:**

1. Costill, D.L., J. Kovaleski, D. Porter, **J. Kirwan**, R. Fielding, and D. King. Energy expenditure during front crawl swimming: predicting success in middle-distance events. Int. J. Sports Med. 6: 266-270, 1985.
2. Clarkson, P.M., P. Litchfield, J. Graves, **J. Kirwan**, and W. Byrnes. Serum creatine kinase activity following forearm flexion isometric exercise. Eur. J. Appl. Physiol. 53: 368-371, 1985.
3. Norton J.P., P.M. Clarkson, J.E. Graves, P.L. Litchfield, and **J.P. Kirwan**. Serum creatine kinase activity and body composition in males and females. Hum. Biol. 57(4): 591-598, 1985.
4. **Kirwan, J.P.**, P.M. Clarkson, J.E. Graves, P.L. Litchfield, and W.C. Byrnes. Levels of serum creatine kinase and myoglobin in females after two isometric exercise conditions. Eur. J. Appl. Physiol. 55: 330-333, 1985.
5. Costill, D.L., F. Rayfield, **J. Kirwan**, and R. Thomas. A computer based system for the measurement of force and power during front crawl swimming. J. Swimming Res. 2(1): 16-19, 1986.
6. Neuffer, P.D., D.L. Costill, W.J. Fink, **J.P. Kirwan**, R.A. Fielding, and M.G. Flynn. Effects of exercise and carbohydrate composition on gastric emptying. Med. Sci. Sports Exerc. 18(6): 658-662, 1986.
7. Neuffer, P.D., D.L. Costill, M.G. Flynn, **J.P. Kirwan**, J.B. Mitchell, and J.A. Houmard. Improvements in exercise performance: Effects of carbohydrate feedings and diet. J. Appl. Physiol. 62(3): 983-988, 1987.
8. **Kirwan, J.P.**, D.L. Costill, H. Kuipers, M.J. Burrell, W.J. Fink, J.E. Kovaleski, and R.A. Fielding. Substrate utilization in leg muscle of man following heat acclimation. J. Appl. Physiol. 63(1): 31-35, 1987.
9. Fielding, R.A., D.L. Costill, W.J. Fink, D.S. King, J.E. Kovaleski, and **J.P. Kirwan**. Effects of pre-exercise carbohydrate feedings on muscle glycogen use during exercise in well-trained runners. Eur. J. Appl. Physiol. 56: 225-229, 1987.
10. Jang, K.T., M.G. Flynn, D.L. Costill, **J.P. Kirwan**, J.A. Houmard, J.B. Mitchell, and L.J. D'Acquisto. Energy balance in competitive swimmers and runners. J. Swimming Res. 3(1):19-23, 1987.
11. Neuffer, P.D., D.L. Costill, R.A. Fielding, M.G. Flynn, and **J.P. Kirwan**. Effect of reduced training on muscular strength and endurance in competitive male swimmers. Med. Sci. Sports Exerc. 19(5): 486-490, 1987.
12. Costill, D.L., W.J. Fink, M.G. Flynn, and **J.P. Kirwan**. Muscle fiber composition and enzyme activities in elite female distance runners. Int. J. Sports Med. 8(Suppl): 103-106, 1987.
13. Graves, J.E., P.M. Clarkson, P.L. Litchfield, and **J.P. Kirwan**. Serum creatine kinase activity following repeated bouts of isometric exercise with different muscle groups. Eur. J. Appl. Physiol. 56: 657-661, 1987.
14. Graves, J.E., P.M. Clarkson, P.L. Litchfield, and **J.P. Kirwan**. Serum creatine kinase isoenzymes CK-MB following isometric exercise. J. Cardiopulmonary Rehab. 7: 451-457, 1987.
15. Flynn, M.G., D.L. Costill, **J.P. Kirwan**, W.J. Fink, and D.R. Dengal. Muscle fiber composition and respiratory capacity in triathletes. Int. J. Sports Med. 8: 383-386, 1987.
16. Costill, D.L., M.G. Flynn, **J.P. Kirwan**, J.A. Houmard, J.B. Mitchell, and S.H. Park. Effects of repeated days of intensified training on muscle glycogen and swimming performance. Med. Sci. Sports Exerc. 20(3): 249-254, 1988.
17. **Kirwan, J.P.**, D.L. Costill, M.G. Flynn, J.B. Mitchell, W.J. Fink, P.D. Neuffer, and J.A. Houmard. Physiological responses to successive days of intense training in competitive swimmers. Med. Sci. Sports Exerc. 20(3): 255-259, 1988.
18. **Kirwan, J.P.**, D.L. Costill, J.B. Mitchell, J.A. Houmard, M.G. Flynn, W.J. Fink, and J.D. Beltz. Carbohydrate balance in competitive runners during successive days of intense endurance training. J. Appl. Physiol. 65(6): 2601-2606, 1988.

19. Horswill, C.A., D.L. Costill, W.J. Fink, M.G. Flynn, **J.P. Kirwan**, J.B. Mitchell, and J.A. Houmard. Influence of sodium bicarbonate on exercise performance: relationship to dosage. Med. Sci. Sports Exerc. 20(6): 566-569, 1988.
20. Beltz, J.D., D.L. Costill, R. Thomas, W.J. Fink, **J.P. Kirwan**. Energy demands of interval training for competitive swimming. J. Swimming Research. 4(3): 5-9, 1988.
21. Houmard, J.A., **J.P. Kirwan**, M.G. Flynn, and J.B. Mitchell. Effects of reduced training on submaximal and maximal running responses. Int. J. Sports Med. 10(1): 30-33, 1989.
22. Dengal, D., D.L. Costill, M.G. Flynn, and **J.P. Kirwan**. Metabolic and physiological determinants of success during triathlon competition. Res. Quart. 60(3): 234-238, 1989.
23. **Kirwan, J.P.**, D.L. Costill, J.A. Houmard, J.B. Mitchell, M.G. Flynn, and W.J. Fink. Changes in selected blood measures during repeated days of intense training and carbohydrate control. Int. J. Sports Med. 11(5): 362-366, 1990.
24. Bourey, R.E., A.R. Coggan, W.M. Kohrt, **J.P. Kirwan**, D.S. King, and J.O. Holloszy. Effect of exercise on glucose disposal: response to a maximal insulin stimulus. J. Appl. Physiol. 69(5): 1689-1694, 1990.
25. Flynn, M.G., D.L. Costill, **J.P. Kirwan**, J.B. Mitchell, J.A. Houmard, W.J. Fink, and J.D. Beltz. Fat storage in athletes: a metabolic and hormonal comparison of swimming versus running exercise. Int. J. Sports Med. 11(6): 433-440, 1990.
26. **Kirwan, J.P.**, D.L. Costill, M.G. Flynn, P.D. Neuffer, and W.J. Fink, and W. Morse. Effects of increased training volume on the oxidative capacity, glycogen content and tension development of rat skeletal muscle. Int. J. Sports Med. 11(6): 479-483, 1990.
27. **Kirwan, J.P.**, R.E. Bourey, W.M. Kohrt, M.A. Staten, and J.O. Holloszy. Effects of treadmill exercise to exhaustion on the insulin response to hyperglycemia in untrained men. J. Appl. Physiol. 70(1): 246-250, 1991.
28. **Kirwan, J.P.**, R.C. Hickner, K.A. Yarasheski, W.M. Kohrt, B.V. Wiethop, and J.O. Holloszy. Eccentric exercise leads to muscle soreness and transient insulin resistance in healthy young people. J. Appl. Physiol. 72(6): 2197-2202, 1992.
29. Coggan, A.R., W.M. Kohrt, R.J. Spina, **J.P. Kirwan**, D.M. Bier, and J.O. Holloszy. Plasma glucose kinetics during exercise in subjects with high and low lactate thresholds. J. Appl. Physiol. 73(5): 1873-1880, 1992.
30. **Kirwan, J.P.**, W.M. Kohrt, D.M. Wojta, R.E. Bourey, and J.O. Holloszy. Endurance exercise training reduces glucose-stimulated insulin levels in 60- to 70-year old men and women. J. of Gerontology. 48(3): M84-M90, 1993.
31. Kohrt, W.M., **J.P. Kirwan**, D.S. King, M.A. Staten, and J.O. Holloszy. Insulin resistance of aging is related to abdominal obesity. Diabetes. 42: 273-281, 1993.
32. Bourey, R.E., M.A. Staten, W.M. Kohrt, **J.P. Kirwan**, D.S. King, and J.O. Holloszy. Relationship between glucose tolerance and glucose-stimulated insulin response in 65-year-olds. J. of Gerontology. 48(4): M122-M127, 1993.
33. Maughan, R.J., R. Goodburn, J. Griffin, M. Irani, **J.P. Kirwan**, J.B. Leiper, D.P. MacLaren, G. McLatchie, K. Tsintzas, C. Williams, P. Wellington, W.M. Wilson, and S. Wooton. Fluid replacement in sport and exercise - consensus statement. Br. J. Sports Med. 27(1): 34-45, 1993.
34. Williamson, D.L., and **J.P. Kirwan**. A single bout of concentric resistance exercise increases basal metabolic rate 48 hours after exercise in healthy 59-77-year-old men. J. of Gerontol. 52(6): M353-M355, 1997.
35. **Kirwan, J.P.**, D. O'Gorman, and W.J. Evans. A moderate glycemic meal prior to endurance exercise can enhance performance. J. Appl. Physiol. 84(1): 53-59, 1998.
36. Krishnan, R.K., J.M. Hernandez, D.L. Williamson, D.J. O'Gorman, W.J. Evans, and **J.P. Kirwan**. Age-related differences in the pancreatic  $\beta$ -cell response to hyperglycemia following eccentric exercise. Am. J. Physiol. 275: E463-E470, 1998.
37. del Aguila, L.F., K.P. Claffey, and **J.P. Kirwan**. TNF- $\alpha$  impairs insulin signaling and insulin stimulation of glucose uptake in C<sub>2</sub>C<sub>12</sub> muscle cells. Am. J. Physiol. 276: E849-E855, 1999.
38. **Kirwan, J.P.**, L.F. del Aguila, J.M. Hernandez, D.L. Williamson, D.O'Gorman, R. Lewis, and R.K. Krishnan. Regular exercise enhances insulin activation of IRS-1-associated PI 3-kinase in human skeletal muscle. J. Appl. Physiol. 88: 797-803, 2000.
39. O'Gorman, D.J., A. Hunter, C. McDonnacha, and **J.P. Kirwan**. Validity of field tests to evaluate endurance capacity in competitive and international level sports participants. J. of Strength and Conditioning Research. 14(1): 62-67, 2000.
40. del Aguila, L.F., R.K. Krishnan, J.S. Ulbrecht, P. A. Farrell, P.H. Correll, C.H. Lang, J.R. Zierath, and **J.P. Kirwan**. Muscle damage impairs insulin stimulation of IRS-1, PI 3-kinase, and Akt-kinase in human skeletal muscle. Am. J. Physiol. Endocrinol Metab. 279: E206-E212, 2000.

41. O'Gorman, D.J., L.F. del Aguila, D.L. Williamson, R.K. Krishnan, and **J.P. Kirwan**. Insulin and exercise differentially regulate PI 3-kinase and glycogen synthase in human skeletal muscle. J. Appl. Physiol. 89: 1412-1419, 2000.
42. **Kirwan, J.P.**, D. Cyr-Campbell, W.W. Campbell, J. Scheiber, and W.J. Evans. Effects of moderate and high glycemic meals on metabolism and exercise performance. Metabolism. 50: 849-855, 2001.
43. Catalano, P.M., and **J.P. Kirwan**. Maternal factors that determine neonatal size and body fat. Current Diabetes Reports. 1: 71-77, 2001.
44. **Kirwan, J.P.**, L. Huston-Presley, S.C. Kalhan, and P.M. Catalano. Clinically useful estimates of insulin sensitivity during pregnancy – Validation studies in women with normal glucose tolerance and gestational diabetes mellitus. Diabetes Care. 24: 1602-1607, 2001.
45. **Kirwan, J.P.**, D. J. O'Gorman, D. Cyr-Campbell, W.W. Campbell, K.A. Yarasheski, and W.J. Evans. Effects of a pre-exercise moderate glycemic meal on exercise duration and substrate utilization. Med. Sci. Sports Exerc. 33:1517-1523, 2001.
46. Avram, A., V. Patel, H.C. Taylor, **J.P. Kirwan**, and S.C. Kalhan. Euglycemic clamp study in clozapine-induced diabetic ketoacidosis. Ann Pharmacother. 35: 1381-1387, 2001.
47. **Kirwan, J.P.**, R.K. Krishnan, J.A. Weaver, L.F. del Aguila, and W.J. Evans. Human aging is associated with altered TNF- $\alpha$  production during hyperglycemia and hyperinsulinemia. Am. J. Physiol. Endocrinol Metab. 281: E1137-E1143, 2001.
48. Warrington, G., C. Ryan, F. Murray, P. Duffy, and **J.P. Kirwan**. Physiological and metabolic characteristics of elite tug of war athletes. Br. J. Sports Med. 35: 396-401, 2001.
49. **Kirwan, J.P.**, and J. Ming. Modulation of insulin signaling in human skeletal muscle in response to exercise. Exerc. Sports Sci. Rev. 30: 85-90, 2002.
50. **Kirwan, J.P.**, S. Hauguel-de Mouzon, J. LePercq, J-C Challier, L. Huston-Presley, J.E. Friedman, S.C. Kalhan, and P.M. Catalano. TNF- $\alpha$  is a predictor of insulin resistance in human pregnancy. Diabetes. 51:2207-2213, 2002.
51. Catalano, P.M., and **J.P. Kirwan**. Clinical utility and approaches for estimating insulin sensitivity in pregnancy. Sem. Perinatol. 26:181-189, 2002.
52. Catalano, P.M., **J.P. Kirwan**, and S. Hauguel-de Mouzon. Gestational diabetes and insulin resistance: Its role in the short and long term implications for mother and fetus. J. Nutr. (In Press), 2002.
53. Krishnan, R.K., W.J. Evans, and **J.P. Kirwan**. Impaired substrate oxidation in healthy elderly men after eccentric exercise. J. Appl. Physiol. (In Press), 2002.
54. Krishnan, R.K., W.J. Evans, and **J.P. Kirwan**. Delayed glucose clearance in healthy older men is related to abdominal adiposity and hyperlipidemia. Metabolism. (Submitted), 2002.
55. **Kirwan, J.P.**, J.E. Friedman, M. Jing, A. Varashtapoor, L. Huston-Presley, M.F. White, and P.M. Catalano. Longitudinal changes in insulin signaling in human skeletal muscle during pregnancy. Diabetes. (In Prep.), 2002.
56. **Kirwan, J.P.**, R.K. Krishnan, C.M. Marchetti, D.L. Williamson, L.F. del Aguila, D.J. O'Gorman, and B.P. Stetzer. Effects of age on free fatty acid induced insulin resistance. J. Gerontol. (In Prep.), 2002.
57. **Kirwan, J.P.**, S.N. Sistrun, A.D. White, J.A. Treu, J.H. Warra, D.A. Kriz, L.F. del Aguila, R.K. Krishnan, and R. White. A high-protein/low-fat calorie-reduced diet, combined with exercise, facilitates weight loss and fat oxidation in obese men and women. J. Am. Col. Nutr. (Submitted), 2002.
58. **Kirwan, J.P.**, S.N. Sistrun, A.D. White, J.A. Treu, J.H. Warra, D.A. Kriz, L.F. del Aguila, R.K. Krishnan, and R. White. A diet supplement containing pyruvate, conjugated linoleic acid, (-)-hydroxycitrate and globin digest enhances weight loss in overweight women. J. Nutrition. (In Prep), 2002.
59. **Kirwan, J.P.**, W.M. Kohrt, D.M. Wojta, B.V. Wiethop, M.A. Staten, A.A. Ehsani, R.C. Hickner, and J.O. Holloszy. Effect of 7-days of exercise training on insulin action in mild type 2 diabetic men. Diabetes Care. (In Prep.), 2002.
60. **Kirwan, J.P.**, A.M. O'Connor, C.F. Johnson, D.J. O'Gorman, K.D. Buchanan, and K.G.M.M. Alberti. Impaired glucose tolerance after exercise is consistent with a reduced glucagon-like-peptide-1 response. Med. Sci. Sports Ex. (In Prep), 2002.
61. **Kirwan, J.P.**, S.N. Sistrun, R.K. Krishnan, L.F. del Aguila, and C. Marchetti. Effects of diet and exercise on body composition and energy expenditure in older obese glucose intolerant men and women. Am. J. Clin. Nutr. (In Prep), 2002.
62. **Kirwan, J.P.**, D.L. Williamson, D.A. Kriz, R.K. Krishnan, and J.L. Loomis. Acute altitude induced hypoxia stimulates glucose metabolism in humans. J. Appl. Physiol. (In Prep), 2002.

63. **Kirwan, J.P.**, L.F. del Aguila, S.N. Sistrun, A.D. White, J.A. Treu, R.K. Krishnan, and R. White. Plasma leptin regulates resting energy expenditure but not satiety in obese men and women during weight loss. J. Am. Col. Nutr. (In Prep), 2002.

**PUBLISHED ABSTRACTS SINCE 1998: (From a total of 69)**

1. Williamson, D.L., D.A. Kriz, R.K. Krishnan, J.L. Loomis, and **J.P. Kirwan**. The metabolic effects of glucose ingestion at altitude. FASEB J. 12(4): A 723, 1998.
2. Krishnan, R.K., J.M. Hernandez, D.L. Williamson, D. O’Gorman, W.J. Evans, and **J.P. Kirwan**. Hyperglycemia induces age-related differences in substrate metabolism following exercise-induced muscle damage. Diabetes. 47(1): A 390, 1998.
3. del Aguila, L.F., D. O’Gorman, D., R.K. Krishnan, D.L. Williamson, R. Lewis, and **J.P. Kirwan**. Acute exercise decreases insulin stimulation of phosphatidylinositol 3-kinase in human subjects. J. of Sports Sciences. 17(7): 570, 1999.
4. O’Gorman, D., L.F. del Aguila, R.K. Krishnan, D.L. Williamson, R. Lewis, P.A. Farrell and **J.P. Kirwan**. Effects of exercise and insulin on extracellular-signal regulated kinase-1 in human muscle. J. of Sports Sciences. 17(7): 585-586, 1999.
5. Sistrun, S.N., R. Lewis, L.F. del Aguila, R.K. Krishnan, and **J.P. Kirwan**. Effects of diet and exercise on plasma leptin levels and body composition in older obese glucose intolerant men and women. FASEB J. 13(4): A268, 1999.
6. **Kirwan, J.P.**, A.D. White, J. Treu, J. Waara, D. Kriz, S.N. Sistrun, L.F. del Aguila, and R.K. Krishnan. Leptin may contribute to improved body composition in moderately obese women after a weight management program that included a unique dietary supplement. FASEB J. 13(4): A268, 1999.
7. del Aguila, L.F., R.K. Krishnan, R. Lewis, and **J.P. Kirwan**. The physiological stress of muscle damage impairs insulin signaling in human skeletal muscle. FASEB J. 13(4): A877, 1999.
8. Pearson, T.A., **J.P. Kirwan**, D. Maddox, V. Fishell, V. Juturu, P.M. Kris-Etherton. Weight loss and weight maintenance: Effects of high MUFA vs low fat diets on plasma lipids and lipoproteins. FASEB J. 13(4): A539, 1999.
9. del Aguila, L.F., R. Lewis, R.K. Krishnan, J. Ulbrecht, P. Correll, C. Lang, P.A. Farrell, and **J.P. Kirwan**. TNF- $\alpha$  is associated with insulin activated phosphatidylinositol 3-kinase following eccentric exercise in young men. Diabetes. 48(1): A216, 1999.
10. Krishnan, R.K., J.M. Hernandez, D.L. Williamson, D.J. O’Gorman, W.J. Evans, and **J.P. Kirwan**. Delayed glucose clearance in healthy older men is related to abdominal adiposity. Diabetes. 48(1): A294, 1999.
11. del Aguila, L.F., R.K. Krishnan, P. A. Farrell, J. Ulbrecht, P.H. Correll, J.R. Zierath, and **J.P. Kirwan**. TNF- $\alpha$  is associated with insulin-signal transduction following muscle damage in human skeletal muscle. Diabetologia. 42(Suppl. 1): A175, 1999.
12. White, R., A.D. White, J.A. Treu, J.H. Waara, D.A. Kriz, S.N. Sistrun, L.F. del Aguila, R.K. Krishnan, and **J.P. Kirwan**. Effects of a weight management program that included a unique dietary supplement on resting energy expenditure (REE) and thyroid hormone (T3) levels in moderately obese women. (Accepted), Int. J. Obesity Research, 23: A000, 1999.
13. **Kirwan, J.P.**, R.K. Krishnan, S.N. Sistrun, D.L. Williamson, R. Lewis, D.J. O’Gorman, L.F. Del Aguila, D.A. Kriz, and C.M. Marchetti. Decreased visceral fat after exercise and caloric restriction is related to improved glucose tolerance in 57-77 yr old obese men and women with impaired glucose tolerance (IGT). The Gerontologist. 39: 138-139, 1999.
14. **Kirwan, J.P.**, L.F. del Aguila, S.N. Sistrun, A.D. White, J.A. Treu, J.H. Warra, D.A. Kriz, R.K. Krishnan, and R. White. Plasma leptin regulates resting energy expenditure (REE) but not satiety in obese men and women during weight loss. FASEB J. 14(4): A433, 2000.
15. Sistrun, S.N., A.D. White, J.A. Treu, J.H. Waara, D.A. Kriz, L.F. del Aguila, R.K. Krishnan, R. White, and **J.P. Kirwan**. A high-protein, low-calorie diet and exercise program can maintain resting respiratory quotient (RQ) and fat oxidation in obese men and women during weight loss. FASEB J. 14(4): A435, 2000.
16. Avram, A., V. Patel, H.C. Taylor, **J.P. Kirwan**, and S.C. Kalhan. Clozapine-induced diabetic ketoacidosis: Report of a case and critical review of the literature. Am. Assoc. Clin. Endo. 4: 5, 2000.
17. **Kirwan, J.P.**, L. Huston-Presley, S.C. Kalhan, and P.M. Catalano. Estimate of insulin sensitivity from oral glucose tolerance tests during human pregnancy. Diabetes. 49(1): A3, 2000.

18. Sistrun, S.N., R.K. Krishnan, L.F. del Aguila, C.M. Marchetti, and **J.P. Kirwan**. Enhanced lipid oxidation and insulin action after weight loss in older obese men and women with impaired glucose tolerance. The Gerontologist. 40(1): 122, 2000.
19. Catalano, P.M., A. Thomas, L. Presley, C. Johnson, and **J.P. Kirwan**. Long term risk of obesity in infants of women with GDM. J. Soc. Gynecol Investig. 8(1): 242A, 2001.
20. **Kirwan, J.P.**, M.Jing, A. Varashtapoor, J. Shao, J.E. Friedman, and P.M. Catalano. Molecular mechanisms that may explain insulin resistance in human skeletal muscle during pregnancy. Keystone Symposium, 2002.
21. **Kirwan, J.P.**, M. Jing, S. Haugel-de Mouzon, J. Friedman, P.M. Catalano.. Increased TNF- $\alpha$  mRNA expression in human skeletal muscle during late pregnancy. Diabetes. 51(1): A000, 2002.
22. **Kirwan, J.P.**, M. Jing, A. Varastehpour, J. Shao, J. Friedman, P.M. Catalano.. Return of insulin sensitivity postpartum is characterized by increased insulin receptor content and improved receptor activation in human skeletal muscle. Diabetes. 51(1): A000, 2002.
23. **Kirwan, J.P.**, M. Jing, A. Varastehpour, J. Shao, J.E. Friedman, and P.M. Catalano. Molecular mechanisms of insulin action in human skeletal muscle during late pregnancy and postpartum. Diabetes Pregnancy Study Group, West. 2002.
24. **Kirwan, J.P.**, M. Jing, A. Varastehpour, J. Shao, J.E. Friedman, and P.M. Catalano. Enhanced insulin signaling and decreased TNF- $\alpha$  in human skeletal muscle may contribute to the reversal of insulin resistance from late pregnancy to postpartum. European Diabetes Pregnancy Study Group. 2002.
25. **Kirwan, J.P.**, R.K. Krishnan, C.M. Marchetti, D.L. Williamson, L.F. del Aguila, D.J. O’Gorman, and B.P. Stetzer. Effects of age on free fatty acid induced insulin resistance. The Gerontologist. 42(1): 34, 2002.
26. Catalano, P.M., M. Jing, A. Varastehpour, L. Presley, J.E. Friedman, **J.P. Kirwan**. Alterations in insulin signaling pathways in women with normal glucose tolerance (NGT) and gestational diabetes mellitus (GDM): Role of TNF- $\alpha$  in skeletal muscle. J. Soc. Gynecol. Investig. (submitted), 2003.
27. Marchetti, C.M., M. Jing, B.P. Stetzer, F. Gonzalez, and **J.P. Kirwan**. Loss of visceral fat after exercise training is related to decreased insulin resistance in the elderly. Med. Science Sports Exerc. (submitted), 2003.
28. **Kirwan, J.P.**, C.M. Marchetti, B. Nolan, S.N. Sistrun, and R.K. Krishnan. Low glycemic meals elicit a reduced insulin response and do not suppress leptin. FASEB J. (submitted), 2003.

#### **PARTS OF BOOKS:**

1. Duffy, P. and Dugdale, L. (eds). *HPER - Moving Toward the 21st Century*. Champaign, IL. Human Kinetics, 1994.  
*Contributing Editor.*

#### **ARTICLES PUBLISHED IN NONREFEREED JOURNALS:**

1. Neuffer, P.D., D.L. Costill, R.A. Fielding, M.G. Flynn, and **J.P. Kirwan**. Physiological changes during reduced training. Swimming Technique. 24(4): 21-24, 1988.
2. Costill, D.L., M.G. Flynn, **J.P. Kirwan**, J.A. Houmard, J.B. Mitchell, R. Thomas, and S.H. Park. Effects of intensified training on muscle glycogen. Swimming Technique. 25(2): 17-22, 1988.
3. **Kirwan, J.P.**, D.L. Costill, M.G. Flynn, J.B. Mitchell, W.J. Fink, P.D. Neuffer, and J.A. Houmard. Effects of intense training. Swimming Technique. 25(3): 15-19, 1988.
4. **Kirwan, J.P.** Sports Science. SportsPulse. 1(1): 8, 1993.
5. **Kirwan, J.P.** Glucose intolerance and the overtraining syndrome. SportsPulse. 3: 6-7, 1995.
6. **Kirwan, J.P.** Eating for Health and Athletic Performance - Glycemic Index. ACSM Fit Society Page. Summer, 2002.
7. **Kirwan, J.P.**, and B. Egan. Nutrition for Top Sports Performance – The Glycemic Index. SportsPulse. 2002.

#### **WORK CITED IN POPULAR PRESS:**

1. The Orange County Register (California), Health News - Eat Your Oatmeal. Pg. E01, Jan. 28, 1998.
2. Health Magazine. How to eat and run. Pg. 18, May/June, 1998.
3. Nutrition Action Health Letter. Instant Press Coverage. Pg. 8, May 1998.
4. The Plain Dealer (Cleveland). Health and Fitness - Puffing cyclists. Pg. 1F, May 4, 1998.
5. The Herald (Glasgow, Scotland). Ketchup with the latest news. Pg. 17, June 11, 1998.
6. Daily Mail (London). The Secrets of a Perfect Day - Eat Porridge. Pg. 36, August 18, 1998.

7. Men's Health. No Thanks, I'm Stuffed - Eating Strategies. 13(7): 115-116, 1998.
8. Bottom Line – Personal. Eat Before Running. 19(19): Pg. 15, October 1, 1998.
9. Democrat and Chronicle (Rochester, NY), Health – Exercise controls blood sugar. Feb. 22, 2000.
10. Oxygen. The Glycemic Index: The Latest Nutritional Tool for your Diet. May, 2002.

### **INVITED PRESENTATIONS:**

- 2002** MetroHealth Medical Center, Cleveland, USA.  
OB/GYN Grand Rounds: *“Insulin Resistance in Pregnancy and Postpartum: The molecular basis for clinical observations”*  
 Case Western Reserve University School of Medicine, Cleveland, USA  
Nutrition Seminar: *“Free Fatty Acid Induced Insulin Resistance – The role of exercise and diet restriction”*
- 2001** Louis Stokes Cleveland VA Medical Center, Cleveland, USA  
 Topics in Geriatric Medicine Series: *“Effects of exercise and diet on insulin resistance and obesity in aging men and women”*  
 University of Pittsburgh, Pittsburgh, USA.  
 Endocrinology/Metabolism Research Conference: *“Role of Exercise and Diet in the Treatment of Obesity and Type 2 Diabetes”*  
 Magee-Womens Research Institute, Pittsburgh, USA.  
 Dept. of Ob/Gyn Research Conference: *“Insulin Resistance in Pregnancy”*  
 Case Western Reserve University School of Medicine, Cleveland, USA  
Endocrine Rounds: *“Tumor Necrosis Factor- $\alpha$  as a Mediator of Insulin Resistance”*
- 2000** MetroHealth Medical Center, Cleveland, USA.  
OB/GYN Grand Rounds: *“Insulin Resistance Syndrome”*  
 Society for Industrial and Organizational Psychology, 15<sup>th</sup> Annual Conference, New Orleans, USA  
Master Tutorial: *“Getting Physical”*  
Presentation Title: *“The Union of I-O Psychology and Exercise Physiology”*  
 Case Western Reserve University School of Medicine, Cleveland, USA  
Pathology Conference: *“Insulin Resistance and Obesity – Mechanisms and Therapies”*  
 American Diabetes Association, Regional Postgraduate Course, Cleveland, USA  
Course Title: *“The Heart of the Matter: The Challenge of Cardiovascular Disease”*  
Presentation Title: *“The Role of Exercise in the Treatment of Obesity and Type 2 Diabetes”*  
 University of Limerick, Limerick, Ireland  
*“Role of Nutrition and Exercise in Disease from Birth to Old Age”*
- 1998** Gerontological Society of America, National Meeting, Philadelphia, USA  
Symposium Title: *“Oh no, not a cane! Stepping carefully toward solutions to frailty”.*  
Presentation Title: *“Effects of Physical Activity and Diet on Body Composition and Functional Ability”.*  
 American College of Sports Medicine, National Meeting, Orlando, USA  
Symposium Title: *“Role of Exercise as a Non-Pharmacological Therapy in Preventing Diseases Associated with Aging”*  
Presentation Title: *“Physical Activity, Glucose/Fatty Acid Cycle and Obesity”*
- 1997** Gerontological Society of America, National Meeting, Cincinnati, USA  
Symposium Title: *“Exercise and Metabolic Adaptation: From Epidemiology to Cell Biology and Back Again”.*  
Presentation Title: *“The effect of physical activity on glucose metabolism and non-insulin dependent diabetes mellitus (NIDDM) in older people”.*
- Georgia Prevention Institute, Medical College of Georgia, Augusta, USA.  
*“Effects of physical activity, nutrition and aging on insulin action and glucose metabolism”*

- 1996** Mid-Atlantic American College of Sports Medicine Meeting, White Haven, PA  
*"Carbohydrate Metabolism, Physical Activity and Aging"*
- 1995** Centre Community Hospital, University Park, PA  
*"The Older Athlete: Special Considerations"*  
 Kiwanis Club, State College, PA  
*"Exercise and Health"*
- 1993** American Aging Association, National Meeting, Montreal, Canada  
*"Exercise interventions in aging"*
- 1993** Irish Orthopedic Society, National Meeting, Kilkenny, Ireland  
*"Nutrition in sport and physical activity"*
- 1992** European Short Course on Exercise and Aging, Odense University, Denmark  
*"Exercise and carbohydrate intolerance in the elderly"*  
 Sports Drink Consensus Meeting, Birmingham, England  
*"Fluid replacement in sport and exercise"*  
 Pre-Exercise Foods Meeting, Brussels, Belgium  
*"Practical aspects of pre-exercise foods"*
- 1991** Dept. of Physiology and Anatomy, Trinity College, Dublin, Ireland  
*"Fuels for endurance exercise"*
- 1990** Gerontological Society of America, National Meeting, Boston, Massachusetts, USA  
*"Exercise as a primary prevention of disease in the elderly"*  
 US Nutrition and Aging Center, Tufts University Medical Center, Boston, MA, USA  
*"Effects of exercise induced muscle soreness on carbohydrate metabolism"*  
 Department of Exercise Science, University of Massachusetts, Amherst, MA, USA  
*"Effects of carbohydrate intake on overtraining in athletes"*

#### **PRESENTATIONS AT SCIENTIFIC MEETINGS:**

- 2002** Keystone Symposium – Diabetes Mellitus: Molecular Mechanisms, Genetics and New Therapies, Keystone, USA  
*"Molecular mechanisms that may explain insulin resistance in human skeletal muscle during pregnancy"*
- Diabetes in Pregnancy Study Group - West, 13<sup>th</sup> Annual Meeting, Sante Fe, USA  
*"Molecular mechanisms of insulin resistance in human skeletal muscle during late pregnancy and postpartum"*
- American Diabetes Association, National Meeting, San Francisco, USA  
*"Return of insulin sensitivity postpartum is characterized by increased insulin receptor content and improved insulin receptor activation in human skeletal muscle"*
- "Increased TNF- $\alpha$  mRNA expression in human skeletal muscle during late pregnancy"*
- European Diabetes in Pregnancy Study Group, 34<sup>th</sup> Annual Meeting, Lake Balaton, Hungary  
*"Enhanced insulin signaling and decreased TNF- $\alpha$  in human skeletal muscle during pregnancy and postpartum"*
- Gerontological Society of America, National Meeting, Boston, USA  
*"Effects of age on free fatty acid induced insulin resistance"*

- 2000** Experimental Biology (FASEB), National Meeting, San Diego, USA  
*"Plasma leptin regulates resting energy expenditure but not satiety in obese men and women during weight loss"*
- American Diabetes Association, National Meeting, San Antonio, USA  
*"Estimate of insulin sensitivity from oral glucose tolerance tests during human pregnancy"*
- Gerontological Society of America, National Meeting, Washington, D.C., USA  
*"Enhanced lipid oxidation and insulin action after weight loss in older obese men and women with impaired glucose tolerance"*
- 1999** Gerontological Society of America, National Meeting, San Francisco, California, USA  
*"Decreased visceral fat after exercise and caloric restriction is related to improved glucose tolerance in 57-77 yr old obese men and women with impaired glucose tolerance (IGT)"*
- Experimental Biology (FASEB), National Meeting, Washington, D.C., USA  
*"Leptin may contribute to improved body composition in moderately obese women after a weight management program that included a unique dietary supplement"*
- 1998** American Diabetes Association, National Meeting, Chicago, Illinois, USA  
*"Effects of exercise training on insulin mediated phosphatidylinositol 3-kinase activation in human skeletal muscle"*
- 1997** Gerontological Society of America, National Meeting, Cincinnati, Ohio, USA  
*"Effects of eccentric resistance exercise on the pancreatic  $\beta$ -cell response to hyperglycemia in 59-73 year old healthy men"*
- American College of Sports Medicine, National Meeting, Denver, Colorado, USA  
*"Effects of a pre-exercise breakfast cereal on exercise performance and glucose production"*
- 1996** American College of Sports Medicine, National Meeting, Cincinnati, Ohio, USA  
*"A low glycemic meal 45 minutes before exercise improves performance"*
- 1993** American College of Sports Medicine, National Meeting, Seattle, Washington, USA  
*"The effects of eccentric exercise on insulin mediated whole body glucose disposal"*
- 1991** Gerontological Society of America, National Meeting, San Francisco, California, USA  
*"The effects of exercise training on insulin action in non-insulin dependent diabetics"*
- American College of Sports Medicine, National Meeting, Orlando, Florida, USA  
*"Eccentric exercise causes transient insulin resistance in young subjects"*
- 1990** Gerontological Society of America, National Meeting, Boston, Massachusetts, USA  
*"Factors associated with basal insulin levels in older individuals"*
- American College of Sports Medicine, National Meeting, Salt Lake City, Utah, USA  
*"Effect of 7 days of exercise training on insulin action in non-insulin-dependent diabetics"*
- 1989** American College of Sports Medicine, National Meeting, Baltimore, Maryland, USA  
*"Effects of acute exercise on insulin response in man"*
- 1988** American College of Sports Medicine, National Meeting, Dallas, Texas, USA

*"Training overload: carbohydrate balance and fatigue"*

- 1987** American College of Sports Medicine, National Meeting, Las Vegas, Nevada, USA  
*"Hormonal responses to a sudden increase in training load"*
- 1986** American College of Sports Medicine, National Meeting, Indianapolis, Indiana, USA  
*"Muscle glycogen sparing following heat acclimation"*
- 1985** American College of Sports Medicine, National Meeting, Nashville, Tennessee, USA  
*"Changes in female levels of serum creatine kinase and myoglobin following two isometric exercise conditions"*

**MEMBERSHIP OF PROFESSIONAL ORGANIZATIONS:**

- 1996-02** American Physiological Society (APS)  
**1989-02** American Diabetes Association (ADA)  
**1990-02** The Gerontological Society of America (GSA)  
**1998-02** American Society for Nutritional Sciences (ASNS)  
**1998-02** American Association for the Advancement of Science (AAAS)  
**2001-02** North American Association for the Study of Obesity (NAASO)  
**1982-02** American College of Sports Medicine (ACSM)

**AWARDS:**

- 1982** Sigma Xi Research Grant-in-Aid Award  
**1989** NIH - National Research Training Award  
**1991** Fellow of the American College of Sports Medicine  
**1995** NIH - National Research Service FIRST Award

**AWARDS TO TRAINEES:**

- 1998** Research Award of the Endocrinology and Metabolism Section, American Physiological Society FASEB Meeting.  
 Luis del Aguila, Predoctoral Ph.D. student in Physiology  
*"Tumor necrosis factor- $\alpha$  impairs insulin stimulation of insulin receptor substrate (IRS)-1 and IRS-2-mediated phosphatidylinositol 3-kinase activation"*

**OTHER PROFESSIONAL ACTIVITIES:**

***University Affiliations:***

- 2000-01** Faculty Preceptor – Chester Summer Scholars Program - MHMC  
**1999-02** Faculty Mentor - NICHD Women's Reproductive Health Research Career Development Program – CWRU at MHMC  
**1994-99** Faculty Member in Graduate Program in Nutrition - Penn State University  
**1994-99** Faculty Member in Graduate Program in Physiology - Penn State University  
**1994-99** Preceptor on the Gerontology NIH Predoctoral Training Grant - Penn State University  
**1996-99** Preceptor on the Physiology NIH Predoctoral Training Grant - Penn State University
- 2002-03** General Clinical Research Center, Scientific Advisory Committee, Chair – MetroHealth  
**2000-02** Institutional Review Board for Human Subjects, Member – MetroHealth  
**2001-02** Institutional Review Board, Subcommittee on Adverse Reactions - MetroHealth  
**1999-02** General Clinical Research Center, Scientific Advisory Committee, Member – CWRU

- 1998-99** Institutional Review Board for Human Subjects, Member - Penn State University  
**1994-99** General Clinical Research Center, Advisory Committee, Member - Hershey Medical School  
**1995-99** General Clinical Research Center, Advisory Committee, Member - University Park  
  
**1999-02** Dept OB/GYN, Research Committee  
**1994-99** Kinesiology Candidacy Committee  
**1996-99** Kinesiology Advisory Committee  
**1997-99** Physiology Faculty Screening Committee  
  
**1999** Nominated to the Faculty Senate - Penn State University

***Editorial Assignments:***

- 1986-92** Reviewer for International Journal of Sports Medicine  
**1987-02** Reviewer for Journal of Applied Physiology  
**1991-02** Reviewer for Medicine and Science in Sports and Exercise  
**1994-02** Reviewer for Journal of Clinical Endocrinology and Metabolism  
**1994-96** Reviewer for International Journal of Sport Nutrition  
**1995-01** Reviewer for Journal of Gerontology  
**1998-01** Reviewer for American Journal of Physiology  
**2000-01** Reviewer for Acta Physiologica Scandinavica  
**2001-02** Reviewer for Journal of American College of Nutrition  
**2001-02** Reviewer for Journal of Biological Chemistry  
**2002-03** Reviewer for British Journal of Sports Medicine  
  
**1995-02** Editorial Board of National Strength and Conditioning Journal  
  
**1992-93** Editor of proceedings from the 34th World ICHPER Congress  
**1981-82** Editor of Irish Journal of Physical Education

***Service to Organizations:***

- 1991-93** Member of the European Committee for Research on Physical Activity for the Elderly  
**2000** NIH - Ad hoc member, Geriatric and Rehabilitative Medicine Study Section  
**2000** NIH - Ad hoc member, NIA/SRO/Pepper Centers Review Committee  
**2000** External Reviewer, Innovation and Science Research Investments Program, Alberta, Canada

***Consulting:***

- 1992-93** University of Limerick, development of a Sport Sciences B.Sc. degree  
**1992-93** University College Cork, development of a Sports Medicine M.Sc. degree  
**1992-93** Wander (U.K.) Ltd. - development of consensus statement: rehydration and exercise  
**1994-01** Consultant, SHL-Group, State College, PA